

Societies and Academies

London

Royal Society, February 18.

E. N. DA C. ANDRADE and R. C. PARKER: A standard source of sound and the measurement of minimum audibility. A source of sound has been constructed of which the energy output can be measured in absolute units. The air in a tube is maintained in vibration by means of a loudspeaker unit attached to one end: the other end is open, and serves as the source. The energy output is found by measuring the length of the traces of smoke particles at an antinode, the method being thus a very direct one. One of the difficulties is to ensure that a given current flowing through the speaker unit shall always produce the same amplitude. The source was calibrated in terms of the current supply by determining the currents corresponding to various measured amplitudes at fixed frequencies. It has been used to determine the least pressure variation detectable by the ear, under conditions free from background noise and unwanted reflections.

C. J. MILNER: The magneto-resistance effect in cadmium at low temperatures. Apparatus is described for measuring the increase of electrical resistance of specimens of cadmium, at low temperatures, in magnetic fields up to 26 kgauss. At temperatures above 20° K., Kapitza's observation, that for strong fields a linear variation of resistance with field strength replaces the initial square law, was confirmed. At helium temperatures a new effect was found. In addition to the linear effect mentioned, a square-law increase was observed, producing a very large increase of resistance in pure specimens. The increase of resistance could be represented as $a.H^2 + b.H$, where b is constant, and a is inversely proportional to the residual resistance of the specimen. a is constant at the lowest temperatures, but falls rapidly above 4° K. to negligible values; b varies only slightly with the temperature. The a -effect is absent when the magnetic field is parallel to the current, and the curve then shows a saturation effect, at helium temperatures. It would seem that the a -effect has previously been observed, though not recognized, in other metals of the non-cubic groups: but that the effect is absent or much smaller in the cubic metals, copper, silver, gold and aluminium.

Edinburgh

Royal Society, February 1.

JAMES KENDALL: Ions and isotopes. No separation of isotopic ions was obtained by running a solution a considerable distance along a series of tubes; hence ionic mobility is fundamentally dependent upon *volume*, not upon *mass*. Many difficult separations, however, such as pairs of rare earth elements or radium from barium residues, were readily achieved by ionic migration. A slight separation of the isotopes of mercury by fractional electrolysis was obtained in 1923. Work on hydrogen was begun in 1930, but pure 'heavy hydrogen' was first isolated in America two years later.

A. GRAHAM: Ciliary currents on the gills of some Tellinacea (Lamellibranchiata). The relationship between the lamellibranch *Solecurtus* and the Tellinacea, evident on morphological grounds, is stressed by the arrangement of the frontal ciliary tracts on the outer gills, which in both groups beat towards

the ctenidial axis instead of to the free margin of the gill as normally. This supports the interpretation of the outer gill of Tellinacea as homologous with the supra-axial extension of other lamellibranchs and that of *Solecurtus* as a reduplication of the same structure.

Paris

Academy of Sciences, January 25 (C.R., 204, 201-304).

EMILE BOREL: The imitation of chance.

ANTONIN GOSSET and LÉON BINET: The increase of the proportion of glutathione in the liver by treatment with sulphur compounds.

JEAN BAPTISTE SENDERENS: The catalytic decomposition of halogen-substituted acetic acids, in liquid systems. Details of the decomposition products of trichloroacetic, tribromoacetic and dichloroacetic acids when heated below their boiling points with various catalysts. The nature of the reaction varied with the catalyst; thus trichloroacetic with thoria gave phosgene, hydrochloric acid and carbon monoxide, while with activated carbon the products were carbon dioxide and chloroform.

MAURICE GIGNOUX and FRANCK BOURDIER: The Rhodanian fluvio-glacial formations in the neighbourhood of Bellegarde (Ain) and the neo-Würmian ice period.

MARC COURTAND: Left curves of the fourth order.

MAX EGER: Canonical systems of an algebraical variety.

JEAN LOUIS DESTOUCHES: Spaces with finite character.

LOUIS PASQUALINI: The conditions of convexity of a V_p-1 variety of $p-1$ dimensions immersed in Euclidian space R_p of p dimensions.

G. AVAKUMOVIĆ: Theorems relating to Laplace integrals on convergence boundaries.

NY TSI-ZE: The so-called circular transversal vibration of a hollow quartz cylinder.

LÉON BESCHKINE: Corrections to be applied to the general theorems utilized in resistance of materials when the displacements are not negligible.

EMILE SEVIN: Cosmic radiation and the stars of the principal series.

JEAN CICHOCKI: The latent energy of solid solutions.

JULES GÉHÉNIAU: The production of electromagnetic waves by means of neutrinos.

ALBERT GRUMBACH and PIERRE VIDAL: A new method of preparing semipermeable membranes. The copper ferrocyanide membrane is formed by a special technique on a glass filtering plate, after the pores of the latter have been reduced by deposition of gelatinous silica.

MARCEL PAUTHENIER and CHARLES MARTIN: The limiting electric charge of very small particles.

JEAN CRUSSARD and LOUIS LEPRINCE-RINGUET: Study with the large Bellevue electromagnet of the passage through screens of the particles of cosmic radiation.

Mlle. SUZANNE VEIL: Some batteries with unlike electrodes.

Mlle. MARGUERITE PEREY: The spectra of barium and strontium.

PIERRE BARCHEWITZ: The absorption spectra of amines in the near infra-red. (6000-95,000 Å.)

GEORGES DÉCHENE: The extreme ultra-violet emitted by electrical discharges in air under reduced pressure.

T. NICOLAS PANAY. The continuous flame spectrum of potassium.

- PAUL SOLEILLET: The mean duration of life of the zinc atom in the state 2^3P_1 and the method of total absorption. Discussion of the interpretation of the experiments of W. Billeter.
- Mlle. YVETTE CAUCHOIS: Weak emissions in the L spectrum of rhenium (75).
- PIERRE AUGER, PAUL EHRENFEST, JUN., ANDRÉ FEORN and ANDRÉ FOURNIER: The angular distribution of hard corpuscular cosmic rays.
- JACQUES ERRERA and POL MOLLET: The (OH) band of monomolecules of alcohol in the region of 3μ .
- MME. MARIE FREYMANN: The absorption spectra in the near infra-red of mixtures of amines and alcohols. The formation of ammonium compounds.
- RENÉ DELAPLACE: The thermal conductivity of unsaturated hydrocarbons at low pressure.
- HUBERT FORESTIER and RICHARD LILLE: The variation of the catalytic power of ferromagnetic bodies at the Curie point. Studies based on the reaction $CO_2 + H_2 = CO + H_2O$ in the presence of various ferromagnetic oxides as catalysts. The variations of the catalytic activity of the three oxides used were shown to be related to the electronic phenomenon at the Curie point.
- RENÉ PERRIN and JEAN LAMBERTON: Contribution to the study of the equilibria between metals and slags. Discussion as to the applicability of the law of mass action to metals in contact with slag.
- EMILE CHERBULIEZ and MME. ANNA HERZENSTEIN: The detection and estimation of colloidal sulphur and of polysulphide sulphur in sulphurous waters.
- GEORGES DARZENS and ANDRÉ LEVY: New researches on the condensation of dichloroacetic ester with ketones and aldehydes by magnesium amalgam.
- J. D. H. DONNAY and DAVID HARKER: The generalization of the law of Bravais.
- B. CHUBERT: Graphical expression of regional metamorphism.
- FRANCK BOURDIER: New observations on the extension of the ancient glaciers in the lower valley of the Isère.
- GÉRARD WATERLOT: The age of the folds and faults of the Cambrian massif of Rocroi.
- LOUIS DUBERTRET: Fragments of tectonic breccia at the surface of the green Syrian rocks.
- HENRY HUBERT: Observations of detail on the bar of Dahomey.
- PIERRE GAVAUDAN: The final condition of the nucleole during mitosis and its general relations with the thymonucleic chromatin.
- THEODOR SOLACOLU and DÉMÈTRE CONSTANINESCO: Tumours with neoplastic characters formed on plants by the action of β -indolylacetic acid.
- RENÉ SOUÈGES: The embryogeny of the Dip-sacaceæ. The development of the embryo in *Scabiosa Succisa* L.
- ALFRED BALACHOWSKY: The experimental rupture of the diapause in the caropcase or 'ver des pommes' (*Laspeyresia pomonella*).
- GABRIEL GUIGNON and Mlle. ANNE RAFFY: The influence of the points of heating presented by the wings of diurnal Lepidoptera exposed to solar radiations on the power of flight of these insects.
- MLADEN PAIĆ: The identification of the pigment elaborated by the diphtheria bacillus.
- MAURICE DOLADILHE: A property of the viscous protein of syphilitic sera. It is shown that the substance imparting to a syphilitic serum characters of flocculation enabling it to be differentiated *in vitro* from a non-syphilitic serum, is localized in the viscous protein.
- ANDRÉ BOIVIN and MME LYDIA MESROBEANU: The nature and biological properties of the toxins produced by the Shiga bacillus and by the Flexner bacillus.

Cracow

Polish Academy of Science and Letters, December 7.

S. K. ZAREMBA: Remarks on the approximate integration of differential equations.

K. KOZIEL: Gibbs's formulæ for the ratios n_1 and n_2 of the areas of triangles.

A. KOTECKI: New fluctuation bands in the spectrum of cadmium vapour.

Mlle. A. WRZESINSKA: Influence of the concentration on the distribution of the intensities in the photoluminescence spectrum of glycerol solutions of tryptoflavine.

S. DOBINSKI and J. WESOLOWSKI: The coefficient of viscosity of liquid selenium. The viscosity-temperature curve does not show the irregularities found some time ago by Pelabon in his study of the electrical conductivity of selenium. Liquid selenium belongs to the second class of associated liquids according to Andrade's theory of viscosity.

L. MARCHLEWSKI and Mlle. R. GRÜNBAUM: Absorption of the ultra-violet rays by certain organic substances. (42) Datisctin, morin and quercetin.

MME. J. DYAKOWSKA: Researches on the velocity of the fall of pollen of several species of trees.

S. KRZEMIENIEWSKI and J. KOVATS: Action of iron and of molybdenum on the fixation of nitrogen by *Azotobacter*.

MME. Z. MALASZYNSKA-SUCHCITZ: Cytological researches on the tegumentary glands of the crayfish, and considerations on the role of the plasmatic structures.

R. TOWARNICKI: Structure of the hooked apparatus in the anterior part of the body of the larva of the blowfly (*Calliphora vomitoria*).

Rome

Royal National Academy of the Lincei
(*Atti*, 23, 721-806; 1936).

W. BLASCHKE: Contribution to integral kinematics.

G. ZWIRNER: Integration of a matrix according to Volterra.

G. LAMPARIELLO: A theorem of statics of van den Dungen.

B. FINZI: Dispersion of a vortex in a plastic medium.

E. FROLA: Certain integrals capable of resolving the dynamic problem of bent beams (1). The equation $(C(x)y'(x')) = -\lambda M(x) \sin y(x)$; $y(0) = y(1) = 0(2)$.

G. KRALL: Vibrations induced by inert and lightened loads which are in motion on a bridge.

L. GIALANELLA: Meridian observations of Jupiter and of Vesta in 1935.

I. CASTELLI: Equivalent widths and central intensities of absorption lines in the solar spectrum at the centre and at the edges.

G. C. WICK: Diffusion of slow neutrons.

P. GUARESCHI: Calculation of latent heats of evaporation.

G. CENTOLA: Structure of acetyl cellulose soluble in acetone, or 'cellite'.

F. PENTA: Fossil carbon in the Mesozoic of Longobucco in Calabria.

G. LANDRA: The tricocicloforus of Sergio Sergi and its first application. The use of this instrument for measuring dimensions of hair in anthropological studies is described.